WHAT IS CLAIMED IS:

1. An image processing apparatus for encoding an image which contains a region to be encoded to have higher image quality than surrounding portions, comprising:

detection means for detecting a quantization step from a bitstream of the image encoded in a first stage;

quantization step control means for controlling the detected quantization step; and

selection means for encoding the image in a second stage using the controlled quantization step, and selecting one of the images encoded in the first and second stages.

2. The apparatus according to claim 1, wherein said selection means detects the presence/absence of a block outside the region from the bitstream.

3. The apparatus according to claim 1, wherein said quantization step control means updates the quantization step when said selection means detects only a block inside the region from the image.

4. The apparatus according to claim 3, wherein said quantization step control means updates until a block outside the region is obtained.

5. The apparatus according to claim 4, wherein said quantization step control means updates the quantization step to be larger than that before update.

6. The apparatus according to claim 1, wherein the region of the image is encoded again using the quantization step updated by said quantization step control means in the second stage.

7. An image processing apparatus for encoding an image which contains a region to be encoded to have higher image quality than surrounding portions, comprising:

computation means for computing an index using an area of the image and an area of the region; and

quantization step control means for controlling a quantization step using the index.

8. The apparatus according to claim 7, wherein the index includes a ratio of the area of the region to the area of the image.

9. An image processing apparatus for encoding input image data, comprising:

determination means for determining a high image quality encoding region in the image data, which is to

be encoded to have higher image quality than surrounding regions;

transformation means for generating transformation data by computing orthogonal transforms of the image data;

filling means for shifting the transformation data in the high image quality encoding region to an MSB side, filling "0" in lower bits obtained as a result of the bit shift process, and filling "0" in upper bits of the transformation data outside the high image quality encoding region;

encoding means for encoding bit planes that form the transformation data;

designation means for designating an order in which bit plane encoded data obtained by said encoding means is to be output; and

output means for outputting the bit plane encoded data on the basis of the output order designated by said designation means.

10. The apparatus according to claim 9, wherein said output means comprises control means for controlling the bit plane encoded data to be output from said encoding means.

11. The apparatus according to claim 9, further comprising quantization means for quantizing the transformation data.

12. The apparatus according to claim 9, wherein said transformation means generates the transformation data by computing wavelet transforms of the image data.

13. An image processing apparatus for decoding input image data, comprising:

input means for inputting encoded data which has a high image quality encoding region which has been encoded to have higher image quality than surrounding regions, and contains output order encoded data that designates an order in which bit plane encoded data that form the encoded data is to be output;

storage means for storing the bit plane encoded data which form the encoded data on the basis of the output order encoded data;

bit shift means for shifting bits of the encoded data stored in said storage means;

decoding means for decoding the encoded data whose bits have been shifted by said bit shift means; and

inverse transformation means for generating image data by computing inverse orthogonal transforms of data decoded by said decoding means.

14. The apparatus according to claim 13, wherein said bit shift means shifts bits of the encoded data corresponding to the high image quality encoding region stored in said storage means to an LSB side.

15. The apparatus according to claim 13, further comprising dequantization means for dequantizing the data decoded by said decoding means.

16. The apparatus according to claim 13, wherein said inverse transformation means generates the image data by computing inverse discrete wavelet transforms of the data decoded by said decoding means.

17. An image processing method for encoding an image which contains a region to be encoded to have higher image equality than surrounding portions, comprising:

a detection step of detecting a quantization step from a bitstream of the image encoded in a first stage;

a quantization step control step of controlling the detected quantization step; and

a selection step of encoding the image in a second stage using the controlled quantization step, and selecting one of the images encoded in the first and second stages.

18. An image processing method for encoding an image which contains a region to be encoded to have higher image quality than surrounding portions, comprising:

a computation step of computing an index using an area of the image and an area of the region; and

a quantization step control step of controlling a quantization step using the index.

19. An image processing method for encoding input image data, comprising:

a determination step of determining a high image quality encoding region in the image data, which is to be encoded to have higher image quality than surrounding regions;

a transformation step of generating transformation data by computing orthogonal transforms of the image data;

a filling step of shifting the transformation data in the high image quality encoding region to an MSB side, filling "0" in lower bits obtained as a result of the bit shift process, and filling "0" in upper bits of the transformation data outside the high image quality encoding region;

an encoding step of encoding bit planes that form the transformation data;

a designation step of designating an order in which bit plane encoded data obtained in the encoding step are to be output; and

an output step of outputting the bit plane encoded data on the basis of the output order designated in the designation step.

20. The method according to claim 19, wherein the output step comprises a control step of controlling the bit plane encoded data to be output in the encoding step.

21. The method according to claim 19, further comprising a quantization step of quantizing the transformation data.

22. The method according to claim 19, wherein the transformation step includes a step of generating the transformation data by computing wavelet transforms of the image data.

23. An image processing method for decoding input image data, comprising:

an input step of inputting encoded data which has a high image quality encoding region which has been encoded to have higher image quality than surrounding regions, and contains output order encoded data that

designates an order in which bit plane encoded data that form the encoded data are to be output;

a storage step of storing the bit plane encoded data, which form the encoded data, in a storage medium on the basis of the output order encoded data;

a bit shift step of shifting bits of the encoded data stored in the storage medium in the storage step;

a decoding step of decoding the encoded data the bits of which have been shifted in the bit shift step; and

an inverse transformation step of generating image data by computing inverse orthogonal transforms of data decoded in the decoding step.

24. The method according to claim 23, wherein the bit shift step includes a step of shifting bits of the encoded data corresponding to the high image quality encoding region stored in the storage medium in the storage step to an LSB side.

25. The method according to claim 23, further comprising a dequantization step of dequantizing the data decoded in the decoding step.

26. The method according to claim 23, wherein the inverse transformation step includes a step of generating the image data by computing inverse discrete

wavelet transforms of the data decoded in the decoding step.

27. A computer readable memory for storing a program code that implements an image processing method cited in claims 17.

28. A computer readable memory for storing a program code that implements an image processing method cited in claims 18.

29. A computer readable memory for storing a program code that implements an image processing method cited in claims 19.

30. A computer readable memory for storing a program code that implements an image processing method cited in claims 23.